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CULTURAL RECONNAISSANCE OF ROCK BORROW AREAS NEAR
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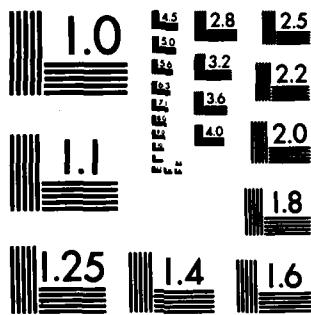
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CULTURAL RECONNAISSANCE OF
ROCK BORROW AREAS NEAR KEKAHA, KAUAI, HAWAII

by

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U.S. Army Engineer District, Pacific Ocean
Honolulu, Hawaii
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MAY 1 71000BACKGROUND

An archaeological reconnaissance survey, involving portions of eight valleys in Kekaha, Waimea District, Kauai Island, was conducted by Bernice P. Bishop Museum for the U.S. Army Corps of Engineers under Contract No. DACW84-77-C-0019. Aki Sinoto and Eric Komori of the Department of Anthropology carried out the walk-through survey on August 28 and 29, 1978.

The valleys are being considered as potential borrow sites for stones and boulders to be utilized in a planned revetment fronting the Kekaha coastline. The purpose of the survey, as stated in the Scope of Work dated August 10, 1978, was "to identify and assess the general nature of the cultural resources probably present and to delineate areas of probable prehistoric and historic resources which should be avoided as field stone borrow sites."

INTRODUCTION

The survey area encompasses portions of eight adjoining valleys located between .5 and 1 mile north of Kekaha town and the Kekaha Sugar Company, Ltd. mill, on the southwestern coast of Kauai Island (Fig. 1). From east to west, the valleys are: Hukipo, Kapilimao, Waiaka, Paua, Waipao, Kahoana, Ho'ea, and Waiawa, which fronts Ho'ea and Kahoana. In general, the valleys are small, narrow, and steep-sided, and are typical of the many leeward stream-cut valleys of the

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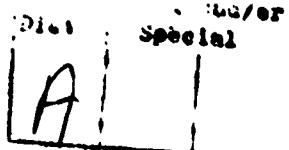
Hawaiian Islands. The interior topography is generally rocky, with steep, weathered valley sides, nearly vertical cliffs in the upper regions, and areas of loose rubble and talus slopes in the lower regions. The narrow valley floors, usually occupied by one major stream, appear to be floodplains with alluvial fill and seasonal stream beds and tributaries. Repeated flooding is evidenced by intermittent areas of erosion, and by the presence of boulder trains and abundant water-transported debris. At the time of the survey, the valleys were dry with sparse low-lying vegetation cover, facilitating accessibility and visibility. Dominant flora include *kiawe* (*Prosopis pallida*), and *koa-haole* (*Leucaena glauca*), with occasional stands of *kukui* (*Aleurites moluccana*), *wili-wili* (*Erythrina sandwicensis*), and *mango* (*Mangifera indica*). Other flora noted were *pānini* cactus (*Opuntia megacantha*), *pili* grass (*Heteropogon contortus*), *ti* (*Cordyline terminalis*), *taro* (*Colocasia esculenta*), *'ilima* (*Sida fallax*), and *papyrus* (*Cyperus papyrus*), with some dry grasses, weeds, and shrubs.

Five of the valleys, Kapilimao, Waiaka, Waipao, Kahoana, and Ho'ea, are still utilized for grazing, and cattle have contributed in creating the generally disturbed state of the valley floors. In addition to cattle, a mule and some horses were seen, as well as mice, *pueo* (Hawaiian owl), and other more common forms of exotic avifauna.

The fieldwork entailed walking systematic traverses within the valleys to ensure maximum coverage of terrain of up to 30% slope, as specified in the Scope of Work. Measurements were taken in the metric system, and orientations were based on magnetic north. A U.S.G.S. map (Kekaha Quadrangle, 1:24,000 scale) was used as a field reference. Photographic recording was done with black and white film on 35-mm format. Overviews of each valley were taken from ridges wherever possible.

RESULTS

Only five previously unrecorded sites were located and no artifacts or exposed midden areas were encountered during the survey. Following completion of the fieldwork two Kaua'i archaeologists, Mr. Francis Ching of Archaeological Research Center Hawaii, and Dr. William Kikuchi of Kaua'i Community College, were consulted. Both archaeologists were aware of previous disturbance by agricultural and cattle-grazing activities in the valleys, and inferred that these factors



may have contributed to the paucity of observable sites. Neither Mr. Ching nor Dr. Kikuchi knew of any other significant sites within the project area.

A brief description of the area surveyed and sites located in each valley is presented below. Recommended restrictions on borrowing activities in each valley are noted, and restricted areas are shaded on ^{Map} Figure 1.

IIUKIPO (Fig. 2)

This small valley was surveyed from the mouth to approximately 2,000 ft inland. A great deal of previous bulldozer disturbance is evidenced by rubble piles and furrows. A cane-haul road makes a looping circuit through the valley, bounding both the east and west limits of the survey area, and traversing the project area about 1,600 ft inland. No surface archaeological features or portable artifacts were encountered.

No restrictions are placed within the survey boundaries in this valley.

KAPILIMAO (Fig. 3)

At present, cattle are kept in this valley and extensive bulldozer clearing is apparent in large portions of the survey area. Bagasse is being dumped in the cleared area near the mouth of the valley, and a bulldozed road leads up to the irrigation siphon that traverses the valley at the upper end of the survey area, approximately 4,300 ft inland.

The surveyed portion of the valley is archaeologically cleared, with no restrictions on borrow activities.

WAIAKA (Fig. 4)

This valley was surveyed from its mouth to approximately 4,300 ft inland. Cattle are kept here, and the generally disturbed conditions are similar to Kapilimao. A bulldozed road leads up the valley to the irrigation siphon, following along the western bank of the main stream bed. Two sites were located in the central portion of the survey area (see Fig. 1).

Site 1 is a rectangular stone cairn constructed of basalt rock and rubble (Fig. 5), located approximately 20 meters west of the bulldozed road. It measures

2.2 meters long by 2 meters wide and .80 meter in height. Of undetermined function, it may mark a grave.

Site 2 is a series of small overhang shelters located at the foot of a cliff across the stream bed and approximately 50 meters east of Site 1. The fronting areas are modified with stone walls, terracing, and a platform (Fig. 6).

Both Sites 1 and 2 have been marked with pink flagging tape so as to be readily visible during the borrow activities. A buffer zone of at least 10 meters surrounding these sites is recommended.

The remaining portions of the valley, within the area surveyed, were found to be lacking in remains, and are archaeologically cleared for borrow activities.

PAUA (Fig. 7)

This valley was surveyed from the mouth to the existing water tank, approximately 2,000 ft inland. A cane-haul road parallels the main stream bed in the western half of the valley floor. Much of the survey area has been extensively bulldozed and cleared, although roughly a third of the area is relatively undisturbed. Several crude terraces, walls, and 'auwai (irrigation ditches) were located, east of the stream bed and south of a newly bulldozed clearing. These surface remains are probably the remnants of a small agricultural complex.

The area extending from immediately south of the bulldozed clearing, east of the stream bed, to the valley mouth has been restricted from borrow activities (see Fig. 1).

WAIPAO (Fig. 8)

The southern portion of this valley has been extensively bulldozed and was previously planted in sugarcane (Ching, personal communication). Kōke'e Road runs inland along the eastern slope of the valley and constitutes the eastern limit of the survey. Cattle are kept in portions of the valley, west of the main stream bed to the pumping station at the upper end of the survey area, 5,000 ft inland. A few sites, including crude terracing, stone piles, and an apparent cattle wall (Fig. 9), were located in the northern portions of the valley.

The area immediately south of the pumping station, comprising about a third of the survey area, is restricted from borrowing activities (see Fig. 1).

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The southern limit of the restricted area is readily apparent because the cattle wall traverses this portion of the valley. The wall continues southward, paralleling the stream into the unrestricted area, but is clearly visible and should be avoided.

WAIAWA (see Fig. 10)

This is the wide valley that fronts Hō'ea and Kahoana Valleys. It was surveyed from the mouth to Hauola Ridge, where Hō'ea and Kahoana branch off, approximately 3,500 ft inland. An open flume traverses the valley at this point. The area is presently occupied by an herbicide plant and pumping station, operated by the Kekaha Sugar Company, and has been almost totally bulldozed. One previously recorded site (no. 15 on Fig. 1) has been extensively disturbed by bulldozing. The Statewide Inventory for Kaua'i lists this site as totally destroyed (State site no. 50-30-5-15; Bishop Museum Site 50-Ka-C3-27 and -28; Bennett site 15). However, a few remnant surface features, mostly terraces and discontinuous single-stone alignments, were still visible during the current survey. Some historic features, such as concrete foundations and narrow-gauge rails, are also present and probably date from the historic sugarcane era. No information is available for historic remains in the valley, however.

The site is highly disturbed, and this area is not designated as restricted (see Fig. 1). However, because of the possibility of subsurface remains, excavation during borrowing activities should be avoided in this area.

Another complex of terraces and small walls was located north of the pumping station along the eastern slope leading into Kahoana Valley. This complex and site 15 originally were probably continuous.

Since this eastern area appears to be relatively undisturbed, it is more significant for further investigation, and thus is restricted (see Fig. 1). The restricted area is bounded on the west by the vegetation line at the periphery of the bulldozed area and on the south by the pumping station and flume. The restricted area continues to the north into Kahoana Valley, along the eastern bank of the main stream bed.

KAHOANA

This valley appears to be relatively undisturbed, except for the effects of cattle and a bulldozed road leading inland along the western bank of the stream

bed. Numerous small terraces, enclosures, wall segments, and stone piles continue inland along the valley floor, and these remains hold strong potential for further archaeological investigation.

For this reason, the entire surveyed area of Kahoana Valley, to 6,800 ft inland, is restricted except for a 40-meter wide corridor centering on the bulldozed road. Along this corridor are concentrations of stream-bed stones and boulder trains that could be retrieved with a minimum of disturbance to the rest of the valley, and the corridor affords easy access for heavy equipment.

HO'EA (Fig. 10)

Disturbance in this valley (to 6,800 ft inland) is limited to a few cattle corrals near the mouth and a bulldozed jeep road that runs inland along the main stream bed. At present the major impact on the cultural resources can be attributed to the cattle.

This valley exhibits the greatest potential for cultural resources of all the valleys surveyed. Hauola Heiau, Hawaii State Register site 50-30-5-16 (Bishop Museum Site 50-Ka-C3-1; Bennett site 16), designated "High Value," is located at the western foot of Hauola Ridge (see Fig. 1). This site is described in detail by Bennett (1931:36, 37, 44-48, 51, 103). The *heiau* survives in excellent condition (Fig. 11), although some recent disturbance from cattle and stream bank erosion were evident. This site definitely merits preservation and is an excellent candidate for proper restoration and public interpretation. For the present, however, efforts should be made to keep cattle out of the structure.

As in Kahoana, numerous small and crudely constructed sites (Fig. 12) of a marginal nature were seen in the survey area and probably continue farther inland.

Ho'ea Valley is totally restricted, from the mouth at the foot of Hauola Ridge. Pink and blue flagging tape was used to mark a cattle fence traversing the mouth of the valley, and everything inland (north) of the flagging is restricted from borrowing activities.

DISCUSSION

The past environment of coastal Kekaha requires mention here due to its significance for the archaeology of the area. Prior to modern agriculture, the present coastal flat fronting the valleys was swampland, probably not suitable for habitation. Bennett stated:

The small swamp along the Mana flats is the remnant of a great swamp that once extended many miles. Tradition states that the natives could paddle in it from the Barking Sands almost to Waimea. Today this has been mostly drained and the land planted to cane [1931:6].

This statement can be used to infer that prehistoric settlement was concentrated closer to the valleys and ridges on higher, dry ground. However, since no sites were recorded before historic-period alterations, the verification of this inference would be difficult to undertake today. However, if the inland sites, such as those present within the valleys, are preserved and intensively investigated, some light may be shed upon the nature of prehistoric settlement in the Kekaha area.

The general paucity of surface cultural resources within the surveyed portions of the eight valleys is probably due to the extent of clearing and disturbance associated with historic period and modern agricultural activities. Old survey maps show plantations in the vicinity as early as 1891 (Reg. Map 2246 by L. E. Imlay, compiled in 1891 from government and private surveys of Gay and Robinson lands). Today, access corridors to siphons and flumes have been cleared, as well as areas for cattle corrals and fencing.

Archaeological clearance has been noted where the surface reconnaissance showed an absence of structures, features, or other evidence of cultural activity. Areas containing sites have been designated as restricted. If any sites remain, they may be farther inland, beyond the upper limits of the areas specified for this project. Within the scope of work for the surface reconnaissance, no evaluations can be made regarding the potential subsurface cultural resources.

RECOMMENDATIONS

During the fieldwork conditions were observed that are indicative of frequent flooding of the valley floors. It is possible that removal of rock from the floodplain may decrease dispersal of floodwater, hasten the erosional

processes, and possibly promote erosion in the unsurveyed areas. The U. S. Soil Conservation Service has indicated to the U. S. Army Corps of Engineers, however, that the proposed rock-grubbing will not have any unacceptable adverse effects relating to erosion or flooding. Moreover, the Corps "Specifications for Kekaha Shore Protection" (25 August 1978), provide that the contractor submit to the Contracting Officer "Plans for drainage and restoration (of borrow areas) after completion of work." It is still recommended, however, that all possible alternative borrow sites be evaluated. For instance, in clearing cane fields large stones and boulders are consolidated in piles. Many such piles are present in the fields from Koloa to Waimea, in locations that are more accessible than the valleys. Perhaps these can be exploited as sources of stone for the revetment. If this is unfeasible and the Kekaha valleys are to be exploited, the recommendations are to:

- (1) provide that restoration of borrow areas be made to avoid potentially long-range erosional effects caused by removal of stones and boulders on known cultural resources and any unrecorded sites outside the surveyed areas;
- (2) avoid the restricted areas described in this report and shown on Figure 1;
- (3) avoid excavation during removal of stone in Waiawa Valley (see p. 5);
- (4) keep bulldozer clearing for access to a minimum;
- (5) in the event that any subsurface feature or unrecorded site is encountered, particularly during excavation to remove stones and boulders, an archaeologist should be contacted;
- (6) survey any additional areas prior to entry.

REFERENCE

Bennett, Wendell Clark

1931 *Archaeology of Kauai.* B. P. Bishop Mus. Bull. 80. Honolulu.

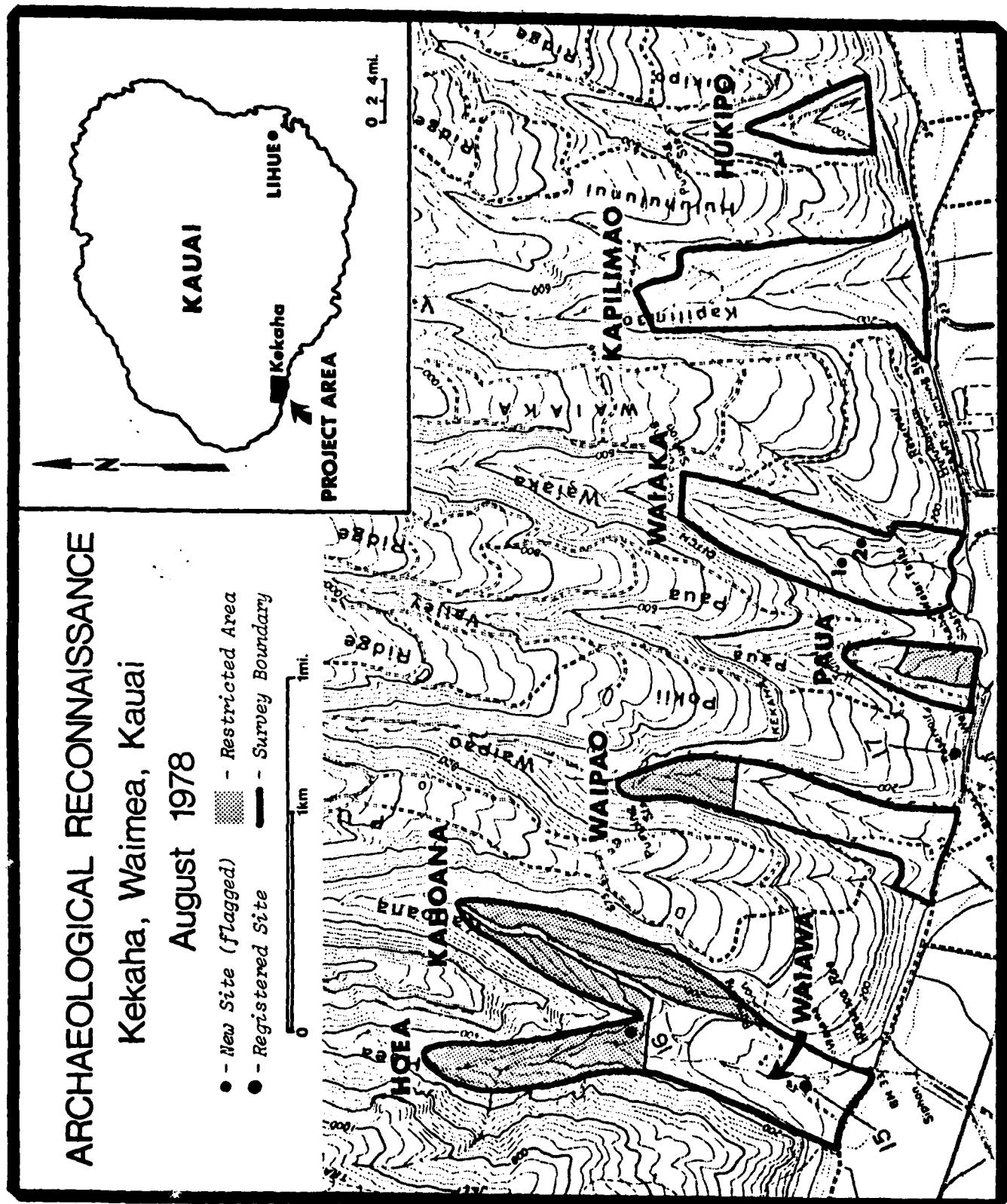


Fig. 1. BOUNDARIES OF SURVEY AREAS IN EIGHT VALLEYS, KEKHA, KAUAI,
SHOWING SITE LOCATIONS AND RESTRICTED AREAS.



a. *Makai* portion, from west



b. *Mauka* portion, from west

Fig. 2. OVERVIEWS OF HUKIPO VALLEY.



a. *Makai* portion, from west



b. *Mauka* portion, from west

Fig. 3. OVERVIEWS OF KAPILIMAO VALLEY.



Fig. 4. OVERVIEW OF WAIAKA VALLEY, FROM NORTH.



Fig. 5. RECTANGULAR CAIRN, SITE 1 IN WAIAKA VALLEY.
View from west.



a. View from southwest



b. View from northwest

Fig. 6. MODIFIED SHELTERS, SITE 2 IN WAIAKA VALLEY.



a. Makai portion, from west



b. Mauka portion, from west

Fig. 7. OVERVIEWS OF PAUA VALLEY.



Fig. 8. OVERVIEW OF WAIPAO VALLEY.
View from Kōke'e Road on the north.



Fig. 9. CATTLE WALL IN WAIPAO VALLEY.
View from north.



Fig. 10. OVERVIEW OF HO'EA VALLEY. View from southeast;
Waiawa Valley in foreground.



a. North wall with waterworn stone; view from south.



b. Pavement of upper platform; view from northwest.

Fig. 11. HAUOLA HEIAU, SITE 50-Ka-C3-1, IN HO'EA VALLEY.



a. Enclosure; view from south



b. Oval enclosure; view from west

Fig. 12. SITES IN HO'EA VALLEY.

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